

What is Claimed is:

1. A lipoprotein compound delivery particle, comprising:
- (a) from 0.1 to 90 percent by weight of a lipophilic or amphipathic compound to be delivered;
- 5 (b) from 0 to 50 percent by weight of at least one polar lipid in an amount sufficient to form a particle with said lipophilic compound
- (c) from 0 to 90 percent by weight of at least one neutral lipid; and
- (d) from .5 to 90 percent by weight of a truncated apolipoprotein B protein in said particle having a deleted LDL receptor binding region.
- 10 2. The particle according to claim 1, wherein said apolipoprotein B further comprises a fused heterologous moiety, where said heterologous moiety is a member of a specific binding pair.
- 15 3. The particle according to claim 2, wherein said heterologous moiety is a peptide.
4. The particle according to claim 2, wherein said heterologous moiety is an antibody.
- 20 5. The particle according to claim 2, wherein said heterologous moiety is a single chain antibody.
6. The particle according to claim 2, wherein said heterologous moiety is a single chain anti HER2 antibody.
- 25 7. The particle according to claim 1, wherein said particle has a diameter less than 18 nanometers.
- 30 8. The particle according to claim 1, wherein said particle has a diameter of from 5 to 5,000 nanometers.

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9. The particle according to claim 1, wherein said apolipoprotein B is selected from the group consisting of through apoB74.

5 10. The particle according to claim 1, wherein said particle has a neutral core, and wherein said ApoB comprises at least ApoB 19.5.

10 11. The particle according to claim 1, wherein said apolipoprotein B is mature Apo B.

12. The particle according to claim 1, wherein said apolipoprotein B is mammalian Apo B.

15 13. The particle according to claim 1, wherein said apolipoprotein B is human Apo B.

20 14. The particle according to claim 1, wherein said at least one polar lipid is a phosphatidylcholine, phosphatidylethanolamine, phosphatidylserine, phosphatidylinositol, sphingomyelin, glycosphingolipid, lysolipid thereof, or combinations thereof.

15. The particle according to claim 1, wherein wherein said at least one neutral lipid comprises a triglyceride, cholesterol, derivative thereof, or combination thereof.

25 16. The particle according to claim 1, wherein said compound to be delivered is paclitaxel.

30 17. The particle according to claim 1, comprising:
 (a) from 0.1 to 50 percent by weight of said compound to be delivered;
 (b) from 10 to 50 percent by weight of said at least one polar lipid;
 (c) from 0 to 10 percent by weight of at said least one neutral lipid; and

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(d) from 50 to 90 percent by weight of said truncated apoB.

18. The particle according to claim 17, wherein said particle is a discoidal particle.

19. The particle according to claim 1, comprising:

(a) from 0.1 to 55 percent by weight of said compound to be delivered;

(b) from 15 to 55 percent by weight of said at least one polar lipid;

(c) from 2 to 30 percent by weight of at said least one neutral lipid; and

(d) from 30 to 80 percent by weight of said truncated apoB.

20. The particle according to claim 19, wherein said particle is a small emulsion particle.

21. The particle according to claim 19, comprising:

(a) from 0.1 to 80 percent by weight of said compound to be delivered;

(b) from 1 to 30 percent by weight of said at least one polar lipid;

(c) from 30 to 90 percent by weight of at said least one neutral lipid; and

(d) from .5 to 10 percent by weight of said truncated apoB.

22. The particle according to claim 21, wherein said particle is a large emulsion particle.

23. The particle according to claim 21, wherein said compound to be delivered is an amphipathic compound, and wherein said amphipathic compound comprises a synthetic lipid.

24. A pharmaceutical formulation comprising a plurality of lipoprotein compound delivery particles of claim 1.

25. The pharmaceutical formulation of claim 24, consisting essentially of said particles in a size of 2 to 20 nanometers in diameter.

5 26. The pharmaceutical formulation of claim 24, consisting essentially of particles in a size of 5 to 40 nanometers in diameter.

27. The pharmaceutical formulation of claim 24, consisting essentially of particles in a size of 10 to 60 nanometers in diameter.

10 28. The pharmaceutical formulation of claim 24, consisting essentially of particles in a size of 15 to 100 nanometers in diameter.

15 29. The pharmaceutical formulation of claim 24, consisting essentially of particles in a size of 25 to 200 nanometers in diameter.

30. The pharmaceutical formulation of claim 24, consisting essentially of particles in a size of 50 to 1,000 nanometers in diameter.

20 31. The pharmaceutical formulation of claim 24, consisting essentially of particles in a size of 250 to 5,000 nanometers in diameter.

32. The pharmaceutical formulation of claim 24, in a pharmaceutically acceptable carrier.

25 33. The pharmaceutical formulation of claim 32, wherein said carrier is an aqueous carrier.

34. The pharmaceutical formulation of claim 24, in sterile lyophilized form.

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36. The method according to claim 35, wherein said administering step is carried out by parenteral injection.

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(a) a truncated apolipoprotein B protein in having a deleted LDL receptor binding region; covalently coupled to

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42. The compound according to claim 39, wherein said heterologous moiety is a receptor binding group.

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43. The compound according to claim 39, wherein said compound is an apoB23 anti-HER2 single-chain antibody fusion protein.

A hand-drawn diagram of a triangle. The top-left vertex is labeled 'a', the top-right vertex is labeled 'c', and the bottom vertex is labeled 'A'.